and to provide program commands to the tower 16 and the lid-opening device 50. The reader device, arranged at a location 28 on the lid-opening device 50 and/or the tower 16, can include, e.g., a Hall effect sensor, to sense the presence of magnets 30 that can be plugged into any of the receiving holes 29 associated with each of the sample-holding cutouts 5. This arrangement can be used, e.g., in combination with entering a corresponding instruction into the computer 12, to initiate a special program subroutine if a sample is marked by the presence of a plug-in magnet. For example, the special subroutine could be to exempt the marked samples from a pH-test and therefore advance those samples through the pH-testing tower without performing a pH measurement.

This arrangement could work, e.g., in such a manner that the sample tray 4 stops for the lid-opening device 50 to take a lid 32' off a sample beaker 32, if no marker 30 has been set for that particular beaker. If on the other hand a marker 30 were present at that beaker position, this would indicate that the beaker is a conditioning beaker 32a without a lid. In the case of a conditioning beaker 32a, the holder 22 at the tower 16 will not be lowered to perform an analysis. If it is lowered, it would only be for a conditioning or washing procedure. As is self-evident, the pick-up device 28 can be configured in any number of different ways, e.g., to pick up a line or color mark, or any other mark on the sample tray 4, instead of using a magnetic marker 30.

As is self-evident, the task is not finished after the lid 32′ has been taken off the beaker 32. For the further handling of the lid 32′, the lid-opening device could be designed to put the lid 32′ on a transporting device such as, e.g., a conveyor belt that would move the lid 32′ to a depository location for lids or to a lid-closing device downstream of the tower 16 in relation to the travel direction of the samples on the tray 4. However, the preferred concept in the case of the analyzer system of Fig. 1 is to design the lid-opening device 50 to also function as a lid-holding device that holds the lid 32′ during the time period when the sample in the now open beaker 32 is analyzed at the tower 16. After the analysis has been completed, the lid 32′ is put back on the beaker 32.

It will be understood that the lid-holding device could also be configured to be separate from the lid-opening device 50. For example, the lid-opening device could be designed as a gripping tool in the manner of a robot, which would deposit the lid 32′ on a holding tray of the lid-holding device. After the analysis, the gripping tool would pick up the lid and set it back on the beaker 32. An analogous solution would also be conceivable with an electromagnet attached to a movable carrier. Obviously, the solutions just mentioned would require a complicated drive mechanism for the gripping tool or the movement of the magnet, which would be less economical than the preferred embodiment described above.

To allow the lid-opening device 50 to also function as a lid-closing device, the sample beaker 32 on the tray 4 has to be moved in a sequence of steps, first in a clockwise direction from the lid-opening device 50 (where the lid 32' has been removed) to the analyzer tower 16 (where the analysis is performed). After the analysis, the sample beaker is moved in the reverse direction back to the lid-opening/holding device, where the lid 32' (which has been held by the device 50 during the analysis) is set back on the beaker. To achieve greater clarity in the illustration of Fig. 1, the tower 16 is set apart from the lid-opening device 50 by two mounting holes 5 in the direction of the tray movement (clockwise), but it should be clear that the advancement of the beakers 32 through the analysis process will be speeded up if the lid-opening device 50 is as close as possible to the tower 16, i.e., only one step or one mounting hole 5 apart from the tower 16.

To synchronize the operations of the tray 4 and the lid-opening/holding device 50, the computer has signal lines 11' and 11" to the program-control unit 9 and the lid-opening/holding device, respectively. The program-control unit 9, by way of an electrical connection 10, controls the drive source, for example a stepper motor 2, for the sample tray, while the electromagnet (to be described in more detail in the context of Fig. 2) of the lid-opening/holding device 50 is controlled synchronously with the steps of the sample tray. The synchronized operations of the tray 4 and the lid-